

## REMARKS

The applicants would like to thank Examiner Patel for the analysis contained in the Examination Report. In particular, the applicants would like to thank the Examiner for the analysis found in the Response to Arguments, as the logic and clarity of this analysis showed where there are areas of agreement and helped to focus the applicants on differences in the art.

### Claim Rejections – 35 USC § 112

The applicants have amended the passage to which the Examiner took exception in paragraph 2 of the Office Action. The independent claim as amended herein now states, in relevant part, "the configuration of the second circumferential seal relative to the first circumferential seal maintaining a seal at the first end of the shaft in the event of a failure of the first circumferential seal...".

Regarding the rejection raised in paragraph 4 of the Office Action regarding non-seal elements in the claim, the applicants have amended the independent claim to move the reference to a blow out preventer from the body of the claim to the preamble, which now reads as follows: "A well bore blow out preventer with a reciprocating shaft, comprising:.."

No new matter has been added by these amendments.

### Claim Rejection – 35 USC § 102

Claim 1 presently stand rejected under 35 USC § 102 as being anticipated by Peil (U.S. Patent No. 4,877,217).

The present invention provides two seals that are dedicated to performing the function of sealing well fluids. This configuration allows drilling operations to continue in the event of a failure of the first seal, as the second seal will perform the required sealing function when the first seal fails. This enables a well drilling operation to be safely completed prior to well shut down.

With the Peil reference a first seal is provided at a first end of a shaft to seal well fluids and a second seal is provided at a second end of the shaft to seal hydraulic fluid. Peil is equipped with a fail safe mechanism that closes the blow out preventer by well pressure to shut down the well immediately and render the blow out preventer inoperative upon a loss of fluid. A leak indicator

port 34 is provided to the exterior, so that rig workers can tell from the colour of the leaking fluid what fluids are leaking. If the fluids leaking are well fluids, they know that they have lost their containment.

The Examiner sees parallels between Peil and the present invention. In accordance with the Examiner's analysis upon the first seal of Peil failing, fluids will tend to migrate along the shaft eventually reaching the second seal of Peil which seals hydraulic fluid. Depending upon the type of seal that is used and the capacity of that seal, the second seal of Peil may serve to hold migrating fluids for a period of time. In any event, the BOP will have become inoperative and drilling operations will have ceased. The Examiner presumably is of the impression that by disabling the fail safe mechanism, Peil would be able to safely complete the drilling operations prior to shut down.

It is respectfully submitted that the Examiner is not taking into account the toxicity of Hydrogen Sulfide gas in "sour gas" wells. Sour gas can be lethal even in relatively small concentrations. A well must immediately be abandoned upon a loss of containment, which allows the release of sour gas. The Examiner is also not taking into account the risk of explosion and fire when gas leaks onto a well site. One spark from vehicles and operating equipment on site, can ignite the leaking gas leading to catastrophic results. The Examiner is also not taking into account the fact that drill pipes become lethal missiles when launched out of a well by well bore pressure. When containment is lost, the drilling crew will be running from the site. If there are measures available to kill the well, they will be initiated before the drilling crew abandons the site. An example of such measures is the pumping of nitrogen down the well to form an ice plug. When such measures are taken, it will take the drilling crew weeks to restore the well to the condition it was in immediately prior to the problem occurring.

The Applicants have amended Claim 1 by specifying that the seals in question must be "dedicated" to sealing well fluids and must be positioned at the same end of the shaft. There is ample support for such an amendment, in the discussion in the application regarding the second seal being "redundant" and serving no other sealing function. It is respectfully submitted that this distinguishes over the Peil reference, where seals are positioned on a different portion of the shaft, performing a different sealing function and any functioning as a "back up" seal is merely

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happenstance. In order to modify Peil in accordance with the teachings of the present invention seal 30 would have to be paired and, preferably, seal 32 would also be paired.

**New Dependent Claim 3**

A new dependent Claim 3 has been added, that is directed to the specific seal cluster disclosed in the present application. Dependent Claim 3 is fully supported in the specification, in FIG. 1 and FIG 2, and in the paragraph of the specification beginning on page 3, line 32.

Claim 3 is believed to further distinguish over the prior art, and to be allowable as depending from an allowable independent claim.

In view of the foregoing amendments and arguments, it is respectfully submitted that the present application is now in a condition for allowance. The applicants, therefore, respectfully requests entry of the amendments, and the early issue of a Notice of Allowance.

Respectfully submitted,

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